SIDEREAL TIMES

The Official Publication of the
Amateur Astronomers Association of Princeton

Director
John Miller
(609) 252-1223
jmiller@princetonastronomy.org

Treasurer
Michael Mitrano
609-737-6518
michael.mitrano@worldnet.att.net

Program Chairman
Ludy D'Angelo
(609) 882-9336
ldangelo106@comcast.net

Assistant Director
John Church
(609) 799-0723
j.church@mindspring.com

Secretary
Larry Kane
(609) 276-1456
kane@princetonastronomy.org

Editors
Bryan Hubbard and Ira Polans
(732) 469-7698 and (609) 448-8644
editors@princetonastronomy.org

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From the Director

Summer time…and the observin's easy. Perhaps if Gershwin was an astronomer, that's how the tune would have been written. Have you taken advantage of the balmy weather and occasional clear night to get reacquainted with the July sky?

Saturn and Mars (having caught up to Saturn and lying very close as this is written), are far to the west as evening sets in. Sorry to see the Ringed Planet leave for the evening season. Replacing him is his grand neighbor Jupiter, now better positioned earlier in the evening. Although his current position on the ecliptic places him fairly low in the southern sky for New Jersey observers (immediately east of the handle of the Sagittarius teapot asterism at minus 22 degrees declination), Jupiter remains one of the better objects for a small telescope.

And Jupiter was on display for a AAAP first. On July 11, Larry Kane, Ron Mittelstaedt, Princeton University's Bob Cava, and Bob Pascal (both avid amateur astronomers), Bob Vanderbei and I set up telescopes and tables for Downtown Princeton Astronomy Night. The scopes were assembled on the Hinds Community Plaza, next to the Princeton Public Library. The Moon held court, and held the eyes of dozens of passers-by. At one point, a twenty foot limousine pulled up to the curb, and four occupants interrupted their evening to take a look through several scopes. To heck with the theatre – this was a better show!

Both astronomers and the public were thrilled with the success of this experiment, with an estimated hundred or more locals learning about astronomy, engaging questions and discovering the Moon, Jupiter and binaries through two refractors and one Newtonian scope.

A meeting to discuss plans for the AAAP 2008 – 2009 season is scheduled for Tuesday, August 5th at 7:30PM. As of this writing, the location is uncertain due to Peyton Hall renovation. I will get that information out via email very soon. Among many topics to review: Star Quest (this year's event is at our usual Hope location, and will be the weekend of 24th, 25th, 26th); additional guest speaker ideas (Ludy is already well underway with prospects and invitations, but is looking for your suggestions); new public outreach projects (like that listed above), and Simpson and Jenny Jump Observatory maintenance. Please remember these meetings are not restricted to board members – on the contrary – we very much need ideas and feedback from the general membership, and ask for your attendance. I'll bring lots of donuts.

Also remember, our Simpson Observatory at Washington Crossing State Park is open not only for the public every clear Friday night – but for **you**, the AAAP members. Please come out (preferably with your scope or binocs in tow) and support your fellow members by bringing the fun of astronomy to guests of the club, and get the chance to chat with your AAAP compadres. Open House dates are listed on the web site.

Cheers—*John Miller, Director*

The deadline for the September issue is:
August 29, 2008
Send your submissions to:
editors@princetonastronomy.org

Treasurer's Report

The AAAP's fiscal year ended on June 30th. On a preliminary basis, we had a surplus for the fiscal year of $2,478 and a cumulative surplus (over the organization's lifetime) of $14,885.

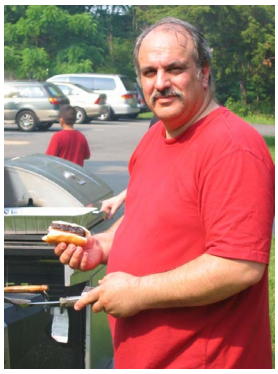
A detailed report on the year's results will be included in the next issue of Sidereal Times.

Michael Mitrano, Treasurer

From the Program Chair

On June 14th members gathered together for our annual picnic. Although the weather was sketchy at times, it turned out to be a beautiful day. Many hamburgers and hot dogs were eaten. Thanks to all who chipped in by bringing a salad or desert. Also, thanks goes out to Wayne at Washington Crossing Nature center for allowing us to use the pavilion, which provided shelter and picnic tables for us to use.

Members enjoying the picnic at Washington Crossing



Thanks to the cooks!!!

As of this writing, there is nothing much to report as to programs. Currently there are several invitations out. I have a confirmed a November 11th speaker. His name is Jonathan Mitchell and he is at the Institute for Advanced Studies. His topic will probably revolve around his research on the atmospheric dynamics of Titan. But he is working on other things also. A title for his talk will be forthcoming.

I do plan on having a Program Committee meeting probably the week of July 27th anyone interested in attending and providing input and help for future speakers are most welcome. Please contact me of your interest. We will go over the meeting schedules, speaker possibilities, and pre-meeting dinner venues for guests and members.

Ludovico D'Angelo, Program Chair

Picture This—The Trifid and Lagoon Nebulas or "What I did on my Summer Vacation"

This is one of those shots I only dreamed about since my southern skies have quite a bit of light pollution. So I had to wait until I got to some darker skies. Since my family and I were heading up to Maine (for ten years now), I knew this shot would be possible as the skies are nice up where we stay and the Milky Way can easily be seen on most nights there, except when cloudy or hazy from the summer's humidity. This was kind of an experiment also to see if the CG5 mount would work with shorter, wide field setup.

The Lagoon Nebula (M8) is the larger red emission gas cloud region toward the bottom while the Trifid Nebula (M20), is the red emission/blue reflective cloud above. Located in Sagittarius, these gas clouds could both

be seen through my finder scope under the dark skies. M8 lies some 5200 ly at a magnitude 6 and M20 is a similar distance at a visual brightness of 9th magnitude.

Equipment Information
Imaging scope: Williams Optics SD66 APO with 0.8x FR/FF
Guiding scope: Orion ED80 with SSAG
Mount: Modified for guiding CG5
Camera: Canon 350D modified
Exposure Information
48 x 180 sec subs
3 x 180 darks
10 flats

I hope everyone's summer is going well and I think we will all be happier as the nights are getting a bit longer now.

Brian Van Liew

Observatory News

The steelwork was scraped and a new finish coat of red Rustoleum was applied. The underlying brown Rustoleum primer coat was in good condition and did not need attention; it was cleaned before applying the new finish coat. The finish coat typically is good for about 4 years, after which time it will probably need to be scraped and a fresh coat applied. With this periodic attention, the brown primer coat should last almost indefintely.

Submitted by John Church

Telescopes (or not) for the Beginning Stargazer (Part II)

Editor's Note: Part I appeared in the April 2008 issue.

TELESCOPES

Types of telescopes:
There are two major components to a standard telescope:
1. The optical tube.
2. The telescope mount.

Mount
The telescope mount is equally important to the performance as the optical tube. It is here where "department store" telescopes are often poorly-designed, leading to an unusable instrument. There are different mount designs. However, regardless of design, *stability* is paramount. Popular mount types for small telescopes include: alt-azimuth, German equatorial, Dobsonian and "GOTO."

- **Alt-azimuth** mounts are simplest in design. They allow up/down (altitude) and sideways (azimuth) motions.
- **German Equatorial** mounts are designed to allow the telescope to follow the apparent motion of the sky. A small electric motor can be added for automatic guiding.
- **Dobsonian** (or "Dob") mounts are a version of the alt-azimuth mount. Invented by a California monk named John Dobson to popularize "street astronomy" in 1970's San Francisco, these have become enormously popular.
- **GOTO** mounts come in various iterations. Most are marketed by the two largest amateur astronomer telescope manufacturers, Celestron and Meade. These computerized alt-azimuth mounts allow users to enter celestial object selections on a keypad. The telescope then automatically slews to the object.

Refractor on alt-azimuth mount (top left). Refractor on equatorial mount (top right). Reflector on Dobsonian mount (bottom).

Truss reflector on Dob mount (left). Schmidt-Cassegrain reflector on GOTO mount (right).

Optical Tube
The optical tube refers to the part of the telescope you look though. It consists of a lens in front, in the case of a **refracting** telescope, or a mirror in back, in the case of a **reflecting** telescope. The optical tube also houses the eyepiece holder ("focuser"). You will frequently see the acronym, "OTA." This means "optical tube assembly." For most telescope purchases, the mount and optical tube assembly come as one package.

The **refractor**, or refracting telescope, is the design many think of when picturing a telescope. It is a tube, containing a main lens in front and eyepiece assembly (focuser) on the opposite end.

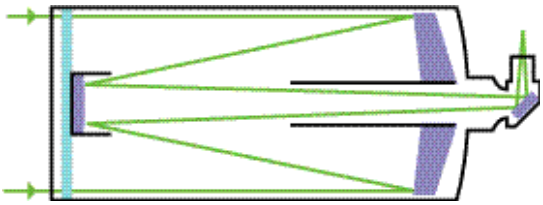
Refractor

The **reflector**, or reflecting telescope, uses a slightly curved (usually parabolic) mirror to gather and focus light. For the amateur astronomer, two primary designs comprise the vast majority of the market. The *Newtonian* design utilizes one mirror in the back of the telescope and a smaller flat mirror in the front of the scope (which redirects the image to the eyepiece).

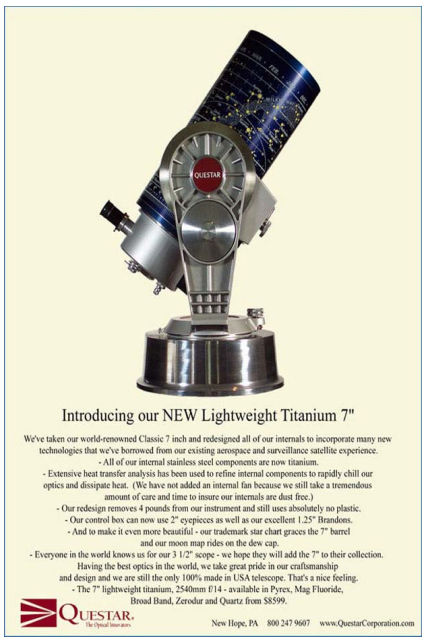
Newtonian Reflector

Another reflector design which gained enormous popularity in the early 1980's is the catadioptric ("CAT a DYE OP trik"). Within that complicated name are two subsets of designs. 1. Schmidt-Cassegrain. 2. Maksutov-Cassegrain. These scopes have a transparent lens ("corrector plate" at the front of the scope, and mirrors at the rear of the instrument and on the back of the corrector plate up front.

The Schmidt-Cassegrain design led the catadioptric craze which remains entrenched today. The two leading manufacturers of these designs are Meade and Celestron. The most recognized manufacturer of the Maksutov-Cassegrain design is the highly-prized Questar.



Catadioptric Reflector



The highly prized Questar catadioptric

What kind of telescope should I buy?

Please read page 1 again. The single most common statement I hear from beginners is, "we bought this telescope, brought it outside and couldn't find anything (in the eyepiece) except the Moon!!" Or, "Yeah, we bought this expensive GOTO scope. But the manual said we had to identify a couple of stars to get the thing lined up. Which stars? What the heck is Arcturus??"

Telescopes are precision instruments and the sky is a wondrous but complex arena. Don't cheat your experience or pocketbook by rushing.

Visit a local astronomy club meeting. If you can locate a star party which fits your schedule, try to attend.

Any telescope worth looking through is expensive. Prices range anywhere from $400 to $15,000. (Guess that doesn't help much, does it?) Quality binoculars can be had for $150–$250.

Some questions you need to ask when considering a telescope purchase:

- What objects most interest me? Planetary? Deep Sky? Double Stars/Variables? Solar?
- Will I be doing mostly visual or imaging?
- How far do I have to travel to get to a relatively decent observing site?
- How much equipment do I want to set up for my observing sessions?
- How much money am I willing to spend for a telescope?
- Will this equipment meet my needs as my interest in astronomy grows?
- Do I want to use this scope for other purposes – such as birding?

And finally, here are a few websites for further equipment information:

http://departments.weber.edu/physics/planet/telescope.html
(This is an excellent place to start. Highly recommended !)
http://skyandtelescope.com/resources/organizations/
(This is the database to find local clubs. There are about 10 in New Jersey)
http://www.princetonastronomy.org
One of the largest clubs in NJ. Two observatories. Open houses throughout the summer)
http://www.celestron.com/mainf.htm
(Celestron Telescopes)
http://www.meade.com
(Meade Telescopes)
http://www.telescope.com
(Orion Telescopes & Binoculars. Highly recommended)
http://www.questarcorporation.com/questar35.htm
(Questar Telescopes. The Rolls Royce of small scopes)

http://www.astrosociety.org/
(Great general resource for astronomy)

John Miller

NASA News…

James Webb Space Telescope (JWST)

With an orbit of about a million miles from earth, in contrast to the 350 miles of Hubble, this telescope will not have the luxury of being serviceable. With a 6.5 meter (21.3 feet) mirror and a sunshield the size of a tennis court, this is a lot larger unit all together. Needless to say neither the mirror nor the sunshield will fit in the rocket in the open position, so they will each open only when the JWST is in orbit. This is not your backyard scope, the price tag is around $5 billion. Knowing how funding has been for many projects we are probably very fortunate that this was not cancelled years ago.

Submitted by Bryan Hubbard

20 Years Ago In Sidereal Times…

SIDEREAL TIMES

Newsletter of the Amateur Astronomers Association of Princeton, Inc.
(Address: P.O. Box 2017, Princeton, N.J. 08540)

Editor: Chas. Yuill July 1988 **Director:** Jay Albert

AAAP CALENDAR

June 14---Meeting 8:00 pm at the New Jersey State Museum Planetarium. Dick Peery has planned a special show for us on the new Minolta projector which was recently installed. The planetarium's exhibits have also been revamped and new ones added.

June 21---AAAP Board of Directors meeting at 8:00 pm at Dave Brown/s (5B Hibben Apts., Faculty Rd., Princeton... coming from Rt. 1 toward Princeton, turn left at first light after crossing Carnegie Lake then take the first left after the boathouse). All members invited, not just officers.

July 16---Space Day at the New Jersey State Museum starting about 10:00 am. We'll need about 4 to 6 volunteers to man the usual booth for the AAAP. In addition to special exhibits and shows, astronaut Bob Cenker will be on hand to talk about the NASA Mars Probe. Even if you can't help man the booth, please stop by to say "hi" and look around. Volunteers for all or part of the day should call Jay Albert.

August 13---Stellafane convention at Breezy Hill near Springfield, Vermont.

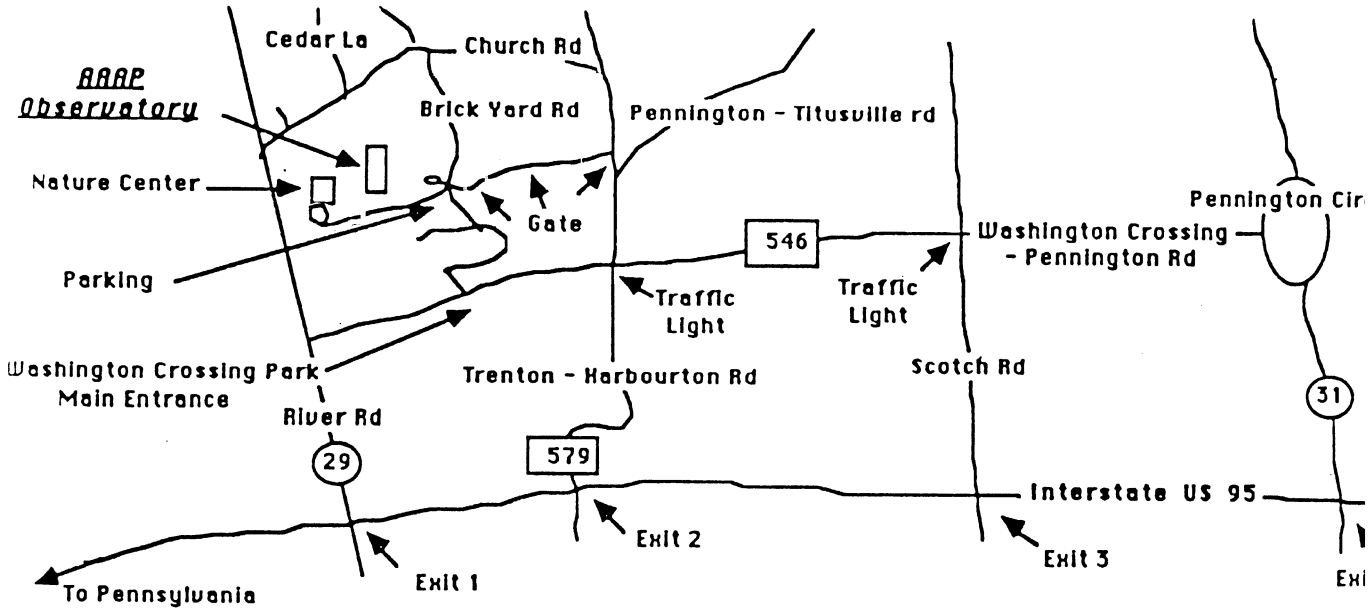
August 19 & 20---AAAP Beemerville trip and Star Party. Call Dave Brown at 924-8085 for details.

September 16---Regular Tuesday night meetings resume at 8:00 pm in Peyton Hall.

NOTE: pre-regular meeting dinners will be held at the TIGER'S TALE Resturant located on Rt. 206 just north of the Rt. 518 intersection.

FROM THE DIRECTOR

"...the old Commodore and I are back at the helm of the AAAP Starship. While I'm certainly honored to be recalled to the Directorship, the fact that my election is so close to the expiration of my last term is sympotomatic of a problem I believe we have at the AAAP. Simply put, we need some fresh meat (I mean new blood) in positions of leadership.



The best way to get to the observatory is to take Interstate 95 South towards Pennsylvania. Then take Scotch road at Exit 3 and proceed north (this amounts to right). Then, at the third traffic light take a left onto the Washington Crossing-Pennington road (County Route 546). Take this road to the first traffic light and take a right onto Trenton-Harbourton road (County Route 579). Take this road to the first driveway on the left, this is the Phillips Farm/Soccer Field entrance to the park. There is a series of three gates with club combination locks. If the gates are not open, you will need the lock combination to open the gate or be accompanied by a Keyholder member. The Simpson (AAAP) Observatory's phone number is (609) 737-2575.

See us on the Web: www.princetonastronomy.org

Amateur Astronomers
Association of Princeton
PO Box 2017
Princeton, NJ 08543